

What is claimed is:

1. An optical system for a gas component analysis, comprising:
  - a first emitter located on a first side of a vehicle path for emitting a first light beam having a first spectrum across the vehicle path;
  - a first receiver for receiving the first light beam; and
  - a spinning filter wheel that filters the beam from the first emitter before the beam crosses the vehicle path.
2. The system according to claim 1, further comprising:
  - a second emitter located on the first side of the vehicle path for emitting a second light beam at a second spectrum across the vehicle path; and
  - a second receiver for receiving the second light beam.
3. The system according to claim 2, further comprising:
  - a third emitter for emitting a third light beam; and
  - a third light receiver for detecting the third light beam, wherein the third light beam travels along a third path, and at least a portion of the third path overlaps with at least a portion of the second path.
4. The system according to claim 1, wherein the light beam is projected across a vehicle path, and the first and second emitters and first and second receivers are located on one side of the vehicle path, and wherein the system comprises a reflector located at the other side of the vehicle path to direct the first and second beams from the first and second emitters to the first and second receivers respectively.

5. The system according to claim 3, when the reflector is a retroreflective assembly having at least three reflective faces, and wherein at least one of the beams travels across the road at a first height above the road, and returns across the road at a second height above the road different from the first height.

6. The system according to claim 1, wherein the first emitter is an infrared emitter.

7. The system according to claim 2, wherein the second emitter is one of an infrared, ultraviolet, or visible light emitter.

8. The system according to claim 2, wherein at least a portion of the first beam overlaps at least a portion of the second beam.

9. The system according to claim 3, wherein the first emitter is an infrared emitter, and wherein the second emitter is an ultraviolet light emitter, and wherein the third emitter is a visible light emitter.

10. The system according to claim 9, wherein at least a portion of the third beam overlaps at least a portion of at least one of the first and second beams.

11. The system according to claim 1, wherein the spinning filter wheel has a plurality of filter elements.

12. The system according to claim 11, wherein the filter elements are quarter circular in shape.

13. The system according to claim 11, wherein the filter elements are removable.

14. The system according to claim 11, wherein the number of filter elements is at least four.

15. The system according to claim 11, wherein the filter elements are disposed at regular angular intervals around the wheel.

16. The system according to claim 11, wherein at least one set of the filter elements are disposed in pairs so that both elements of the pair filter the first light beam simultaneously.

17. The system according to claim 1, further comprising a synchronization feature on the wheel and a controller that interacts with the synchronization feature to measure the speed of rotation of the wheel.

18. The system according to claim 1, further comprising a synchronization feature on the wheel that determines the position of the wheel indicating a filter position.

19. The system according to claim 17, wherein the synchronization feature is a hole that passes through at least a portion of the wheel.

20. The system according to claim 1, wherein the wheel is located proximate to the first emitter.

21. An optical system for a gas component analysis, comprising:  
means located on a first side of a vehicle path for emitting a first light beam having a first spectrum across the vehicle path;  
means for receiving the first light beam; and  
spinning filter means for filtering the beam from the first emitter before the beam crosses the vehicle path.

22. The system according to claim 20, wherein the emitting means emits infrared light.

23. A method for gas component analysis, comprising the steps of:  
emitting a first light beam having a first spectrum across the vehicle path;  
receiving the first light beam; and  
filtering the beam from the first emitter before the beam crosses the vehicle path.